REFERENCE

1. Chargin, L., and Stone, A.: Arch. Dermat. and Syph., 19:750 (May), 1929.

DISCUSSION

NEWTON EVANS, M. D. (White Memorial Hospital, Los Angeles).—Doctor Chambers' communication presents a significant clinical experimental observation. It has a practical bearing on the treatment of syphilis. To know that the Kolmer test will enable the physician to recognize serologically the presence of a primary infection on an average of four days earlier than it can be detected by the Kahn test, is of definite importance in the institution of treatment.

To the student of serology, it opens the way for speculation on the nature of the specific antibodies concerned in the serologic tests for syphilis. In the laboratory of the Los Angeles County General Hospital, observations on approximately ninety thousand parallel Wassermann and Kahn tests have made it clear that there is no close parallelism between the two tests. While there is complete agreement within the limits of the ordinary reading in 96 per cent of specimens, there is a limited group of cases in which there is a constant complete disagreement. Some sera are Kahn-positive four plus with negative Wassermann, and others give exactly opposite reactions. This discrepancy is not due to mistakes in the technique or reading, but is a constant difference proved by many repetitions. This observation is in harmony with numerous large series of observations in other laboratories.

One cannot escape the conclusion that there must be an essential difference in the character of the substance or substances in the serum responsible for the reaction with the antigen in the two tests. Doctor Chambers' observation of the constant difference in date of appearance of positivity of the two tests is strong confirmation of this viewpoint.

On the contrary, men who have made an extensive study of these serologic tests hold a different opinion. Doctor Kolmer has stated: "I have conducted considerable investigation and the results have convinced me that precipitin and complement fixation antibodies are either identical or so closely associated in the phenomenon of complement fixation as to demand the presence of both for the reaction. I believe they are identical or very closely related." But he admits that conclusive evidence of their unity has not been produced. Doctor Kahn expresses a similar opinion and quotes Dean to the effect that precipitin (of the Kahn test) and amboceptor (of the Wassermann test) are the same substance.

Assuming the validity of Doctor Chambers' observation, one must conclude that in the two tests either the nature of the reacting substance or substances in a given syphilitic serum must be in some way different or that the Wassermann (Kolmer modification) test is a more sensitive indicator of the presence of the reacting substance. This latter alternative conclusion appears absurd in view of the thousands of dependable tests on syphilitic serum in which the Kahn is four plus positive and the Wassermann completely negative.

❦

W. T. CUMMINS, M. D. (Southern Pacific General Hospital, San Francisco).—There is an increasingly large number of laboratories that are employing the Kahn technique, either alone or with the Wassermann technique. A comparison of the two tests in the routine examination of many cases has revealed numerous, unexplainably wide differences in results. It has been said that the Kahn test is the more sensitive, especially in eliciting positive reactions during syphilitic treatment.

The author has chosen for his study a very important and practical phase of the subject. The earliest possible diagnosis of syphilis after the appearance of the primary lesion is that which we wish to attain. Negative darkfield results are sometimes followed by positive serologic findings.

With the Kolmer-Wassermann positiveness preceding that of the Kahn by four days, as determined by the author, one might interpret, indeed, such findings by the assumption that the Kahn antigen or antigens were undersensitive. Be that as it may, his results suggest that the complement fixation and the precipitin reactions for syphilis do not elicit the same so-called antibody.

The author has presented a very pertinent contribution and we trust that he may continue the work and that others may be interested, so that an extended investigation will be made in order to facilitate the earliest possible diagnosis of syphilis and, perhaps, to establish the identity or lack of identity of the reacting substances in syphilitic serum.

❦

H. A. WYCKOFF, M. D. (Stanford-Lane Hospital, San Francisco).—The objective of Doctor Chambers' investigation has most important bearings. The value of his contribution, real as it already is, will be enhanced by further work on his part, and by repetition of his experiments by others. Such substantiation is, of course, indispensable.

The expression of an opinion as to the validity of his findings should probably not be attempted by any but those who have already performed similar investigations or parallel experiments. For this reason it seems probable that the valuation and interpretation made by Doctor Chambers himself deserves most attention.

He has perhaps been somewhat too modest in his estimation of the value of his observations as they at present stand. It must be realized that the ultimate test of the worth of a method to the medical profession must be the result obtained when carefully performed by trained workers under everyday conditions and not in some environment specially created.

Doctor Chambers' clear and concise description of his methods and findings seems to indicate that his investigation has been made with dependable reagents and with adequate control. His results and conclusions have a right to consideration by those qualified to judge.

PARTIAL GASTRIC RESECTION*

By E. ERIC LARSON, M. D.
Los Angeles

DISCUSSION *by Clarence G. Toland, M. D., Los Angeles; Charles T. Sturgeon, M. D., Los Angeles; John C. Ruddock, M. D., Los Angeles.*

GASTRIC resection was first successfully accomplished by Theodore Billroth in 1881.[1] A few months later the first gastro-enterostomy was done by Wöffler.[2] Since that time, so thoroughly have the technical barriers been overcome and so well understood are the major indications for gastric surgery that there is now no hesitancy in resorting to surgical procedure. However, there is a striking difference of opinion among our best physicians as to the type of operation to be performed. During the past decade noted European surgeons have constantly recommended partial resection for most gastric lesions, as well as for duodenal ulcers, reporting that the result of this type of operation is much better than that following gastro-enterostomy. This influence has extended to America, where many surgeons cor-

* Read before the General Surgery Section of the California Medical Association at the sixtieth annual session at San Francisco, April 27-30, 1931.

roborate statistics of their European confrères. It is the purpose of this paper to emphasize some of the indications for, and the management of, partial gastric resection.

INCIDENCE

Peptic ulcer, with its complications, continues to be a major problem in gastroduodenal pathology. The etiology remains unknown in the face of earnest investigation by research workers, by physicians and surgeons actively engaged in its treatment, by pathologists, and also from statistical studies made available by medical institutions and insurance companies.

Bevan [8] states that 10 to 12 per cent of our population have peptic ulcer, and that 90 per cent of gastric ulcers occur in the "magenstrasse" (Waldeyer). Robertson and Hargis [4] have demonstrated that there are benign lesions in 19 per cent of necropsies, with 65 per cent in the duodenum and 35 per cent in the stomach. From this we infer that ulcers may develop, then heal, leaving no trace. However we feel about our increasing knowledge of physiology, biochemistry, and the information regarding peptic ulcer, the statistical fact, constantly emphasized and widely practiced, is that approximately three-fourths of all peptic ulcers can be healed by an adequate medical regime and the remainder should be treated by surgery.

Statistics and opinions as to the relationship between gastric ulcer and malignancy vary greatly. Crile [5] is of the opinion that less than five per cent of gastric ulcers become malignant; Lahey [6] states that his estimate is less than 10 per cent. Many surgeons regard most gastric ulcers as surgical when no contra-indications exist. The differential diagnosis between gastric ulcer and early carcinoma is so difficult that an exploration, with the assistance of a pathologist, is often necessary. Gastric cancer has a short history, while it is not unusual to obtain a long ulcer history previous to gastric malignancy, suggesting two facts: that ulcer is not a commonly precancerous condition, and that the medical treatment of ulcer is a failure in many instances. It happens occasionally that the medical profession is spared an embarrassing situation when a huge lesion diagnosed as an inoperative gastric malignancy is denied an exploration for verification, and a cultist leaps the barrier with a satisfied patient.

DIAGNOSIS

The mimicry of ulcer by other pathological conditions, the distorted physiology of malfunctioning organs, and the fact that intrinsic lesions constitute only a small percentage of the causes of dyspepsia, demand a thorough clinical study of the patient. Painstaking diagnostic procedures will include a carefully detailed history and thorough physical examination, combined with laboratory data, including gastric analysis and roentgenologic study.

Gastric retention and blood chemistry studies may indicate a serious degree of alkalosis, with impending tetany. Anacidity may postulate an inactive healed ulcer, malignancy, pernicious anemia, or asthenic-neurotic state with a hypotonic stomach, requiring careful analysis as to a more definite etiology.

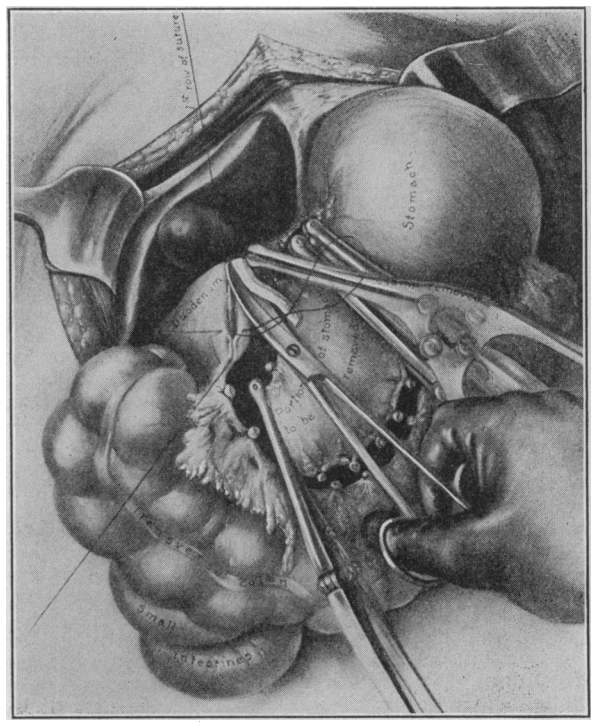

Fig. 1.—Crushed tissue removed from duodenal stump and suture line buried. Portion of stomach to be removed is isolated and ready for removal.

The data will demonstrate whether the ulcer is gastric or duodenal, simple or complicated. Shallow saddle ulcers at the lesser curvature, where the only finding is a diminished peristalsis, may be an exception to this rule, since they frequently escape detection, even in the hands of our best roentgenologists. Thus a careful marshaling of all the facts in regard to the clinical development, size, position, and complications induced by cicatrization, hemorrhage, perforation, or degeneration, with a detailed study of the well-being of the patient, should influence the type of treatment to be instituted. If an incomplete attack is necessitated we must expect an incomplete result.

METHODS OF MANAGEMENT

For years there has been advocated a reform in the surgical and medical rivalry now existing in the management of peptic ulcer. Better nonoperative methods of ulcer treatment are being constantly evolved since Sippy [7] first published his regimen. Excepting patients with obstruction, massive hemorrhage, acute perforation, or malignant degeneration, all peptic ulcers should first be given the advantage of a thorough medical regimen. Even if dietary measures fail, the patient will have been trained in the dietetic restrictions which must follow the operation. Medical management will greatly reduce the inflamed, callous, adherent ulcer mass, and if surgical treatment is instituted the procedure will have been simplified.

Relief of chronic lesions by surgical means must be applied when medical measures fail to give relief to symptoms, to protect against the recurrence of ulcers or such complications as unrelieved pyloric obstruction, or if, in gastric ulcer, there is frank degeneration or suspicion of it. The basic principles in surgical treatment are identical with those postulated in a successful medical regimen, viz., the relief of acidity and the control of muscular spasm, combined with gastro-intestinal continuity, facilitating drainage. Gastrojejunostomy accomplishes this, especially if the anastomosis is well placed and obstruction avoided. Pyloroplasty in selected patients, with excision of the ulcer, combined with careful examination of the open duodenum for unsuspected multiple ulcerations and their eradication, will give a large percentage of excellent results. The election of each type of pyloroplasty (viz., Heineke-Mikulicz, Judd, Finney, Horsley) must be left to the surgeon at the open abdomen, where he may employ vision and palpation. Partial gastric resection may be the operation of choice, especially in those patients who have had previous unsuccessful gastric operations, and in those where radical removal of the pathologic tissues, as well as the acid-bearing portion of the stomach, is advisable.

Various types of partial gastric resection necessitate a broad training and experience, with balanced judgment, to determine authoritatively the conditions which can be reasonably selected for conservative methods and those which should be treated by thorough surgical efforts. Judgment in this type of surgery is knowing whether to take great and seemingly unwarranted risks or to withdraw in the face of unexpected difficulties; whether temporarily to abandon the procedure short of completion when confronted by a formidable lesion and finish the operation at a second stage or to risk operative fatality. In this connection it seems well to emphasize that a temporary type of procedure is indicated in those patients who have such dangerous complications as colic fistulae occurring with marginal ulcers, or old perforations with a posterior communicating cavity before the partial gastric resection is done. When standardization of partial gastric resection is avoided the results will be better.

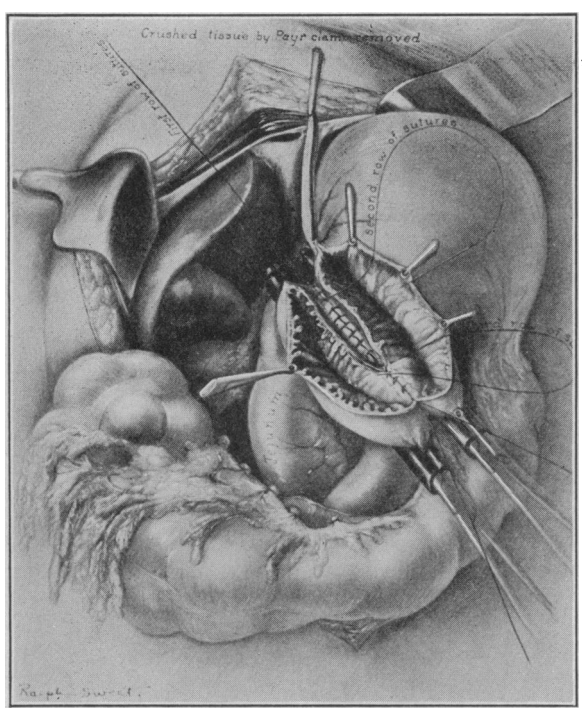

Fig. 2.—Posterior polya. Jejunum brought up through a rent in mesocolon and serosa suture made. Second row nearly completed and mucosal suture started.

Although most of us do not agree with those physicians who are at present eulogizing partial gastric resection as the treatment of choice for duodenal ulcers, it is admitted that there may be a place for this type of operation in large bleeding and eroding posterior wall duodenal ulcers, or in patients who have several large ulcers throughout the first and second portions of the duodenum. Otherwise it does not seem correct to remove a large portion of a healthy stomach for duodenal ulcers which can be handled by a more simple initial operative procedure. Marginal ulcers recurring after gastro-enterostomy and pyloroplasty or malfunctioning anastomoses, and gastric ulcers resistant to adequate medical management, and, of course, new growths which offer a chance of complete removal, seem best treated by partial gastric resection.

Partial resections of the direct type, such as the Billroth No. 1,[1] can be used with advantage where the mobilization of the stomach and duodenum is possible and if the technique of avoiding its dangers is well known and observed. An increasing amount of statistics is constantly becoming available from large institutions, indicating that this type of operation which was formerly so hazardous is giving good results with no increase in operative mortality. Circular excision seems to have minimal indications except for the hour-glass stomach.

The indirect type of resection, based on the Billroth No. 2[1] and its modifications, most notably the Polya,[8] seems best suited in most instances for extensive gastric resection. Since it is advisable that one-half to three-fifths of the pyloric end of the stomach be removed in resections, the acid-bearing portion and the seat of the pathology can be excised with a wide margin. Ulcers involving the lesser curvature may necessitate for their removal modifications of the usual procedures. It may be advantageous to remove the whole lesser curvature and resuture the cut edges as devised by Schoemaker,[9] before the anastomosis is made, whether by the direct or indirect methods of partial gastric resection. It is important that the surgeon exercise caution and make an anticolic type of Polya, with an entero-anastomosis wherever it seems likely that the stump will be too short to bring down through the mesocolon and thereby form an obstruction.

I shall briefly describe the technique of indirect partial gastrectomy after the method of Polya,[8] which I feel has certain advantages and gives

excellent results. The pyloric and gastro-epiploic vessels are ligated. The Payr clamp is then applied, the tissues crushed, the pylorus divided, and the duodenum securely closed by one of several methods. According to the preference of the surgeon, the duodenal end can be either inverted or buried. The latter method is more simple, gives a safe closure and prevents duodenal fistula, which is a severe and dangerous complication. The closure is then reinforced by tags of omentum. If a lesion exists in the duodenum it may be disregarded and the stump of the duodenum closed. The pyloric end of the stomach is then mobilized by ligation in sections of the gastro-hepatic and gastrocolic omenta. The vessels along the lesser curvature are ligated to a point one inch beyond the line at which the resection is to be made. The ligation of the gastric artery must be safe. A long rubber clamp is placed as high as possible on the stomach, which is then turned over to the left. The jejunum is brought up through an opening in the mesocolon and a segment four inches long, about five inches from Treitz' ligament, is caught in a soft rubber clamp. This is sutured, with chromic catgut or silk, to the stomach, the proximal end of the jejunum to the lesser curvature and the distal end of the jejunum to the greater curvature. A large Payr clamp is then placed across the stomach along the line where the resection takes place. Tissues are crushed to facilitate hemostasis, and most of the crushed tissue is removed with scissors. The first suture line prevents retraction of the stomach into a position where suturing would be difficult. Large vessels in the open end of the stomach are clamped and ligated to prevent hemorrhage. An opening of corresponding size is then made in the jejunum and anastomosis completed in the usual way. When the posterior suture line is complete, it is advisable to loosen the clamps and inspect for hemorrhage, which, if present, can be controlled by a transfixing suture. Tension sutures are placed at both ends of the completed suture line to counteract any undue strain. The whole anastomosis is then drawn down through the opening in the mesocolon and the edges of the latter structure are sutured to the stomach at as high a point as possible. The anterior type of resection is made in a similar manner, the jejunum being placed anteriorly to the transverse colon, and an entero-anastomosis is made. The divided gastrocolic and gastrohepatic omenta should be brought together by chromic catgut to prevent possible obstruction due either to herniation or to adhesions.

Postoperatively these patients usually do as well as those following gastro-enterostomy or pyloroplasty. It has been my practice to keep the stomach at rest until danger of hemorrhage is diminished and the edema at the suture line has subsided, approximately four days, fluids being supplied by the rectal and subcutaneous routes. If no contra-indications then exist, liquids are given by mouth in small quantities, increased gradually, after which the diet is restricted to soft, easily digested foods, and the patient instructed to adhere to a rather strict regimen with frequent daily feedings for several months. When six to ten months have elapsed the patient is given barium and is fluoroscoped to determine his progress and the necessity of further advice.

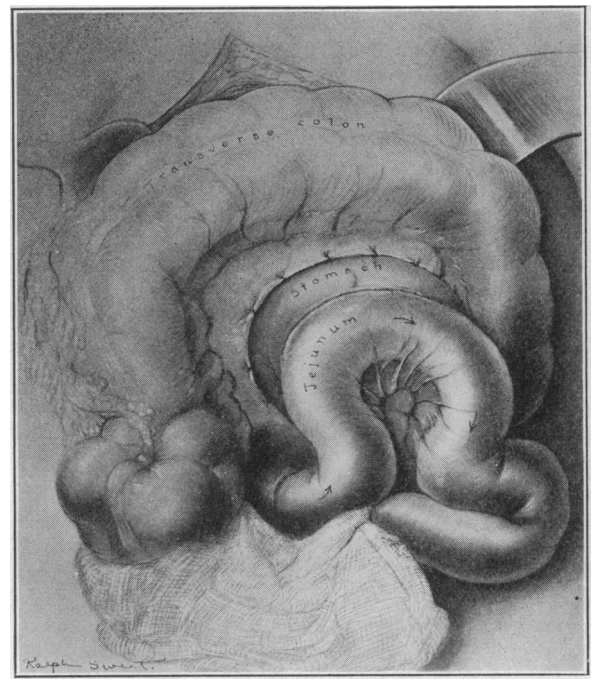

Fig. 3.—Mesocolon securely sutured to the wall of the stomach above the line of anastomosis. Jejunum retroperistaltic.

SUMMARY

1. There is a growing tendency among internists and surgeons to share the responsibility in the management of gastroduodenal lesions. Uncomplicated peptic ulcer should be given the chance of an adequate medical regimen before surgery is advised. The surgeon who does not agree that most chronic peptic ulcers should be treated by an internist, and the internist who does not recognize that a small percentage should have the opportunity offered by surgical procedures are each a detriment to the medical profession, as well as to the patient.

2. Gastric ulcers, situated in the lower half of the stomach or at the lesser curvature, which do not improve on an adequate medical regimen, localized new growths, malfunctioning or ulcerated pyloroplasties or gastro-enterostomies respond well to partial gastric resection.

3. Multiple ulcerations, or large hemorrhaging posterior wall duodenal ulcers, may warrant partial gastric resection where the risk is justified.

4. Benign duodenal ulcerations, if submitted to surgery, should first have the advantage of lesser operative procedures, such as removal with or without gastro-enterostomy or pyloroplasty. Resection can be done at a subsequent operation.

5. Circular excision has its best field of usefulness when applied to the hour-glass stomach.

6. The postoperative treatment of the patients after a partial gastric resection is not dissimilar

to that following pyloroplasty or gastro-enterostomy, except for more frequent feedings with lesser quantities for an extended period.

1930 Wilshire Boulevard.

REFERENCES

1. Reichert, F. L.: The Dawn of Gastric Surgery—The Semi-Centennial of Billroth's First Pylorectomy, West. Jour. of Surg., 12:128 (February), 1931.

2. Wöffler, A.: Gastro-Enterostomie, Centralb. f. Chir., 8:705-708, 1881.

3. Bevan, A. D.: Peptic Ulcer—Etiology, History, and Surgical Treatment, J. A. M. A., 94:2043-2046, No. 26.

4. Robertson, H. E., and Hargis, E. H.: Duodenal Ulcer—An Atomic Study, M. Clin. North America, 8:1065-1092 (January), 1925.

5. Crile, G. W.: Surgery of the Stomach and Duodenum, with Especial Reference to Ulcer, J. A. M. A., 85:1625-1628, No. 21, 1925.

6. Lahey, F. H.: The Treatment of Gastric and Duodenal Ulcer, J. A. M. A., 95:313-316, No. 5, 1930.

7. Sippy, B. W.: Gastric and Duodenal Ulcer—Medical Cure by an Efficient Removal of Gastric Juice Corrosion, J. A. M. A., 54:1625-1630, No. 20 (May 15), 1915.

8. Polya, cited by A. J. Walton: The Surgical Dyspepsias, 376-386. Published by Edward Arnold & Co., London, 1923.

9. Schoemaker, J.: Ueber die Technik Ausgedehnter Magenresectionen, Arch. Für Klin. Chir., Band 94, 541-548, 1911.

DISCUSSION

Clarence G. Toland, M. D. (1930 Wilshire Boulevard, Los Angeles).—Partial gastric resection is a surgical procedure that demands the most careful judgment before being chosen, but in its proper place yields very excellent results. Its indications in a few conditions are fairly positive. In most cases it is a matter for decision only with the abdomen opened and the existing pathology well in view. The location and nature of the lesion, its size, the relative risks of a conservative operation versus the more radical partial gastrectomy, are all factors carefully to be considered.

Gastric surgery is directed essentially at extirpation of the pathologic lesion and an attempt at correction of the disordered physiology. Thus partial gastrectomy is a sound operation physiologically in certain gastric and duodenal ulcers, that is, it removes the acid-forming area, corrects muscle spasm, and allows for postoperative motility. It is not justified as a primary procedure in the treatment of duodenal ulcer due to its still prohibitive mortality. In the bleeding type of duodenal ulcer, too, removal of the bleeding area is highly desirable, but too often we are confronted with a large ulcer with surrounding subacute inflammation and immobility of the first and second portions of the duodenum which renders excision or resection extremely hazardous. Of necessity, we must be content with gastro-enterostomy which, fortunately, prevents recurrence of bleeding in a majority of cases.

A definite indication for partial gastrectomy exists, I believe, in those cases with extensive gastrojejunal ulceration following gastro-enterostomy, also in those cases where the original ulcer either has not healed, or has narrowed the duodenum so that satisfactory pyloroplasty is impossible. The mortality of gastric resection will be between three and five per cent, but in chosen cases the operation is certainly justifiable.

Malignancies without metastasis should, of course, have either a partial or complete gastrectomy, even in the presence of metastasis, if such is not too extensive. If an ulcerated, necrotic, infected, gastric lesion can be removed, we believe a great deal of suffering will be spared the patient; we know the primary gastric lesion causes far more pain than liver metastases. The same principle that applies to removal of a sloughing ulcerating breast cancer with metastases applies here.

The type of operation used is the one which suits the individual case. Occasionally a two-stage operation is indicated. All types of operations have their place, but their application depends upon the experience of the surgeon. No one type can be used in every case.

I am strongly against any surgical procedure that carries hazards when a much more simple procedure will give the same result with less operative mortality, and with fewer and less severe complications. In other words, "surgical judgment is our guide."

Doctor Larson has brought to our attention a subject that should receive careful thought and consideration by all men practicing surgery.

Charles T. Sturgeon, M. D. (1930 Wilshire Boulevard, Los Angeles).—Doctor Larson has reviewed the subject of the surgical treatment of peptic ulcer very well and very conservatively. He wisely did not recommend routine partial gastrectomy for duodenal ulcer.

There is at present much controversy among surgeons as to whether partial gastrectomy should ever be used for duodenal ulcer. In the great majority of duodenal ulcers, especially of the uncomplicated type, there is no question but that excision of the ulcer plus a posterior gastro-enterostomy gives results which are as good, if not better, than partial gastrectomy, and the mortality is much lower.

Occasionally partial gastrectomy is indicated in duodenal ulcers, viz., in ulcers where there have been repeated massive hemorrhages; also in duodenal ulcers situated in the posterior wall and which are adherent to the pancreas. In this latter type, partial gastrectomy should be done if possible. At times it is a very difficult surgical procedure and the mortality is very high.

In gastric ulcers there are more indications for partial gastrectomy than in duodenal ulcers; many of the gastric ulcers are large and deforming and are frequently adherent to the pancreas and to the surrounding structures. Obviously in this type of case a partial resection will give more relief than a gastro-enterostomy. One must remove the pathology if one expects to cure the patient completely.

There is one type of ulcer which in our hands has given a great deal of trouble: that is, an ulcer high up on the lesser curvature, near the esophageal opening. Formerly in this type of case we contented ourselves with a resection of the ulcer and an added posterior gastro-enterostomy, but our results were not satisfactory. In the last two cases of this type we employed the method which Doctor Larson mentioned in his paper, viz., Schoemaker's modification: doing a partial gastrectomy, removing all of the lesser curvature, closing a portion of the segment, and the operation completed by means of a Polya. Our results in these two cases have been better than the results formerly obtained.

Patients who require as extensive an operation as partial gastrectomy are usually in poor physical condition and require thorough preliminary preparation. They should receive an abundance of fluids two to three days before the operation. If they are very anemic they should be given transfusions, and in cases of obstruction gastric lavage should always be done for several days before the operation. Also, as Doctor Larson mentioned in his paper, all ulcer patients on whom surgery has been done should be referred to an internist for medical and dietary supervision over a long period of time.

The technique of doing a gastrectomy today is fairly well standardized. The only debatable part

of the technique is which method is the best to use to restore the gastro-intestinal continuity. If enough of the stomach is left so that the duodenum can be sufficiently mobilized, a Billroth No. 1 type of operation is the operation of choice, as in this manner the normal physiology is restored. But in the other cases, which comprise the majority, so much of the stomach has been removed that a Billroth No. 1 cannot be used; therefore the restoration should be completed by means of either a posterior or anterior Polya.

❀

JOHN C. RUDDOCK, M. D. (1930 Wilshire Boulevard, Los Angeles).—Doctor Larson has offered an excellent discussion of the surgical treatment of peptic ulcer, with a technical description of the "modus operandi" of partial gastrectomy. His attitude is conservatism; and this should be maintained by surgeons doing gastric surgery, because, as the author has stated, approximately 75 per cent of all peptic ulcers can be healed by an adequate medical regimen.

An adequate medical regimen means that the internist should study his case thoroughly, and that his instructions and dietary are religiously carried out by the patient.

The type of operation selected is dependent on the individual case with which we are dealing. This selection should depend upon a combined study by an internist and a surgeon, and the final judgment left to the surgeon when the pathology is seen. However, conservatism should be his rule as regards the type of operation selected.

Irrespective of the type of surgery used, the internist is eventually called upon to treat postoperatively a very large percentage of these people for various and sundry ailments.

To feel that one can reroute the gastric flow or remove the active or acid-forming portion of the stomach without altering the physiology of the organs or changing the metabolism of the individual would be wonderful, if true; but unfortunately this is not so. One must keep in mind that the gastric secretions are necessary for perfect metabolism, and often the stomach organ changes in function a resection from an active, muscular, secreting and mixing viscous organ to a mere funnel, which cannot retain its secretions and which empties its contents almost immediately into the bowel. This immediate emptying does not give the pancreatic and liver secretions the opportunity of mixing consistently with the food elements that is allowed by the slow rhythmic emptying which takes place through a normal duodenum.

It is true that these patients with partial gastrectomy obtain much relief following their surgery; but many of them end in the hands of the internist because of metabolic and physiologic disturbances. Pellagra and anemia are after-results that are not only serious but very difficult to cope with, because of the altered physiology. Other complications, such as persistent diarrhea, eructations of bile, and vague abdominal pains, usually diagnosed "adhesions," are much more common. Occasionally the internist will diagnose recurrent jejunal ulcers.

Because of the altered physiology and metabolism, these patients are never able to revert to a complete dietary; and if they would live comfortably they must restrict their dietary regimen for the rest of their lives.

Surgery is a justifiable procedure in the treatment of peptic ulcer. Partial gastrectomy in the proper hands is an excellent operation for certain conditions. Malignancy is a disease that calls for radicalism rather than conservatism. In other conditions, however, conservative measures are the measures of choice because of the mortality involved in the application of any surgical procedure and because of the altered physiology and metabolism which sometimes eventually leads to further trouble.

UPPER URINARY TRACT AND THE ADJACENT ORGANS—THE DIFFERENTIAL DIAGNOSIS OF PATHOLOGIC CONDITIONS*

REPORT OF CASES

By WILLIAM E. STEVENS, M.D.
San Francisco

DISCUSSION *by Charles P. Mathé, M. D., San Francisco; Wirt B. Dakin, M. D., Los Angeles; Louis Clive Jacobs, M. D., San Francisco.*

THE differential diagnosis of pathologic conditions of the upper urinary tract and the adjacent organs constitutes one of the most interesting studies in the field of medicine and surgery. The practice of medicine, and especially that branch of it known as urology, is rapidly approaching an exact science, and with the armamentarium and methods of precision now at our disposal there is little excuse for mistakes in the great majority of cases. In some instances, however, the usual subjective symptoms are absent and the objective findings negative or misleading. In addition to close approximation anatomically, the upper urinary tract and abdominal organs are closely associated through lymphatic and vascular anastomoses as well as through the sympathetic and cerebrospinal nerve plexuses. Variations in contour, position and size, as well as congenital anomalies and acquired abnormalities of both the urinary and intra-abdominal organs, may add to the confusion. Because of these facts pathologic conditions of the upper urinary tract may be responsible for pain and other symptoms in various parts of the abdomen. Likewise, symptoms apparently due to other intra-abdominal pathology may be present in the absence of disease of these organs. Pathologic conditions of the lungs, pleurae, adrenal glands, and the lower genito-urinary tract in both sexes are occasionally to blame for pain in the upper abdomen and should not be overlooked. The possible coexistence of lesions of both the urinary and the adjacent organs should likewise be remembered. A negative urine does not necessarily exclude cortical abscesses, carbuncles, a noninfected or closed hydronephrosis, a closed renal tuberculosis, or even a calculus. Pain due to all of these conditions may be localized or radiate in any direction and even be responsible for pain in the opposite kidney, the so-called renorenal reflex, or in any of the intra-abdominal organs. Obstructions of the ureters due to strictures, kinks, fibrous bands, or anomalous vessels may be present in the absence of subjective or objective symptoms other than pain. Cecil,[1] in a review of three hundred cases of urinary-tract pathology found that pain, present in one hundred and eighty-three cases, was limited to the abdomen in over 22 per cent. The fact is not generally appreciated that in at least one-third of all patients entering a hospital with uncertain diagnoses urologic investigation is indi-

* Read before the Urology Section of the California Medical Association at the sixtieth annual session, San Francisco, April 27-30, 1931.